

REMARKS

Claims 28-47 are pending. Claims 1-28 have been cancelled and new Claims 28-47 drafted for ease of examination. Support for new Claims 28-47 derives from the specification and claims as originally filed. For example, Figures 1, 2, and the specification at page 14, line 22 through page 15, line 15 describe an automated protein design apparatus comprising a central processing unit that communicates with memory and a set of input/out devices. Support for the steps comprising the HERO search can be found in FIGS. 3B and 3C; and throughout the specification, see for example page 13, line 26, through page 14, line 11, and the examples. Because the foregoing amendments introduce no new matter, Applicants respectfully request their entry.

Claim Renumbering

Applicants acknowledge renumbering of misnumbered claims 27 and 28 as claims 26 and 27. Thus, the newly added claims begin with claim 28.

New Matter

Claims 26 and 27 are rejected under 35 U.S.C. § 112, first paragraph. Claims 26 and 27 have been cancelled and thus the rejection is moot. Applicants request withdrawal of the rejection of claims 26 and 27 under 35 U.S.C. § 112, first paragraph.

Rejection under 112

Claims 1-15 and 20-27 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. The Examiner states that the metes and bounds of HERO are not defined. The rejection is moot as applied to cancelled claims 1-15 and 20-27. Applicants respectfully submit that this rejection does not apply to newly added Claims 28-47, as the new claims recite the metes and bounds of the HERO computation. Withdrawal of the rejection of claims 1-15 and 20-27 under 35 U.S.C. § 112, second paragraph is requested.

Non-statutory subject matter

Claims 1-8, 10-12, 15, and 20-25 are rejected under 35 U.S.C. § 101 because the claimed invention is allegedly directed to non-statutory subject matter. The rejection is moot as applied to claims 1-8, 10-12, 15, and 20-25. Applicants respectfully submit that this rejection does not apply to newly added Claims 28-47 for the following reasons.

Applicant respectfully draws the Examiner's attention to *In re Alappat*, 31 USPQ2d 1545 (CA FC 1994). In this case, an Applicant presented a claim to a rasterizer, containing various claim limitations recited in a "means for" format. The court concluded that the means-plus-function claim, when properly construed claimed a rasterizer "made up of, at the very least, the specific structures disclosed in Alappat's specification corresponding to the means-plus-function elements (a)-(d) recited in the claim." Further, the court stated that, "because claim 15 is directed to a 'machine', which is one of the four categories of patentable subject matter enumerated in section 101, claim 15 appears on its face to be directed to Section 101 subject matter". See *In re Alappat*, 1555.

Alappat's claim 15 had been rejected, stating that it was directed to mathematical subject matter. The Court stated that "the proper inquiry in dealing with the so called mathematical subject matter exception to Section 101 alleged herein is to see whether the claimed subject matter *as a whole* is a disembodied mathematical concept, whether categorized as a mathematical formula, mathematical equation, mathematical algorithm, or the like, which in essence represents nothing more than a 'law of nature,' 'natural phenomenon,' or 'abstract idea'. See *In re Alappat*, 1557, emphasis in original. The Court found that "Although many, or arguably even all, of the means elements recited in claim 15 represent circuitry elements that perform mathematical calculations, which is essentially true of all digital electrical circuits, the claimed invention as a whole is directed to a combination of interrelated elements which

combine to form a machine for converting discrete waveform data samples into anti-aliased pixel illumination intensity data to be displayed on a display means. This is not a disembodied mathematical concept which may be characterized as an 'abstract idea', but rather a specific machine to produce a useful, concrete, and tangible result." *See In re Alappat*, 1557.

In the present application, Applicants submit that independent claims 35 and 42 are directed toward an apparatus, i.e., a microprocessor, for producing a useful, concrete, and tangible result. Accordingly, Applicants submit that independent claims 35 and 42, and dependent claims 36-41 and 43-44 contain statutory subject matter.

In addition, Applicants wish to draw the Examiner's attention to *In re Beauregard*, 35 USPQ2d 1383 (CA FC 1995) holding that computer programs embodied in tangible medium, such as floppy diskettes are patentable subject matter under 35 U.S.C. § 101.

In the present application, Applicants submit that independent claims 28 and 45 are directed towards computer programs embodied in a tangible medium. Accordingly, Applicants submit that independent claims 28 and 45 and dependent claims 29-34 and 46-47 contain statutory subject matter.

Applicants respectfully submit that the rejection under 35 U.S.C. §101 is improper, and should be withdrawn.

Rejection under 102(e)

Claims 1-15 and 20-27 are rejected under 35 U.S.C. § 102(e) as being allegedly anticipated by Mayo *et al.*, U.S. Patent No. 6,188,965. The rejection is moot as applied to cancelled claims 1-15 and 20-27. Applicants respectfully submit that this rejection does not apply to newly added Claims 28-47 for the reasons discussed below.

To anticipate a claim under 35 U.S.C. § 102(e), a reference must teach every element of the rejected claim (MPEP § 2131). Mayo teaches PDA™ that utilizes the DEE computations

described in FIG. 3A. In contrast, the new claims teach a HERO computation that combines and runs simultaneously three search paradigms in a single search algorithm. FIG. 3B illustrates the three search paradigms that are combined in HERO: the dominance criteria, the bounding criteria and the stochastic search paradigm (see also the specification at page 8, line 11, through page 14, line 14 and in FIG. 3C). HERO incorporates new methods to identify rotamer pairs that are incompatible with the GMEC conformation, including split flags and bound flags. Mayo does not teach or suggest the use of HERO. Hence, Mayo does not anticipate the claimed subject matter. Withdrawal of the rejection of 1-15 and 20-27 under 35 U.S.C. § 102(e) is requested.

IDS

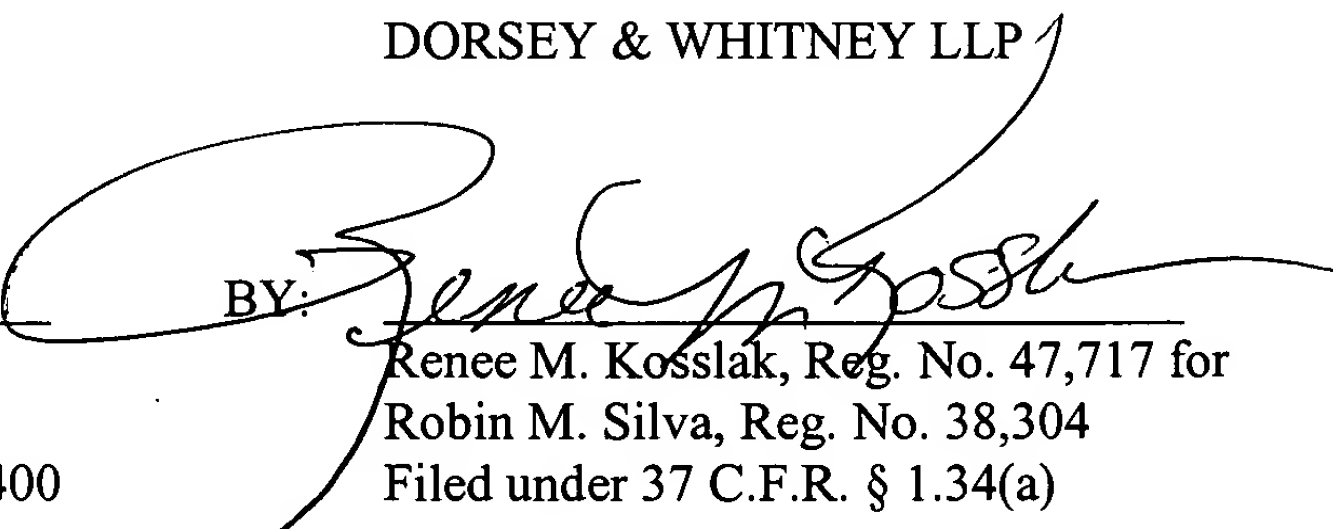
Applicants enclose a copy of the references indicated by the Examiner to be missing in the Supplemental IDS filed on January 24, 2003. In addition, Applicants enclose a copy of the IDS and references filed November 7, 2002, which the Examiner indicates has not been found.

Please direct any calls in connection with this application to the undersigned at (415) 781-1989.

Respectfully submitted,
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